

## Abstract

A radio transmitter-receiver wherein a pilot symbol is used in the transmitter that has undergone M-chip spreading on the frequency axis and N-chip spreading on the time axis by a spreading code of  $M \times N$  chip length (where M and N are any integers equal to or greater than 2), and in the receiver, a spreading code that is not used in spreading said pilot signal is used as a despreading code to despread a received signal and then estimate noise and interference power. The spreading code that is used to spread the pilot symbol and the despreading code that is used in despreading are assigned so as to be orthogonal even if only in N chips on the time axis.